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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,649	03/30/2001	Edward Soh Smith	022101-001800US	8561

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EXAMINER	
GOLDBERG, JEANINE ANNE	
ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 11/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/823,649	SMITH ET AL.	
	Examiner	Art Unit	
	Jeanine A. Goldberg	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-16,20-24,27-32,36-44 and 48-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13,20-24,27-29,36-41 and 48-52* is/are rejected.

7)☒ Claim(s) *14-16,30-32 and 42-44* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 9/19/05
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the papers filed September 15, 2005. Currently, claims 13-16, 20-24, 27-32, 36-44, 48-52 are pending.

2. All arguments have been thoroughly reviewed but are deemed non-persuasive for the reasons which follow.

3. Any objections and rejections not reiterated below are hereby withdrawn in view of applicant's arguments.

a. It is clear from the amendments to the claims and from the arguments that the claims do not require SEQ ID NO: 2, 3, 4, for example but rather require an enzyme which has been altered from this sequence.

Priority

4. This application claims priority to provisional application 60/198,336, filed April 18, 2000.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 13, 20-24, 27-30, 36-42, 48-52 are rejected under 35 U.S.C. 102(b) as being anticipated by Bergquist et al (WO 95/14770, June 1995).

Bergquist teaches SEQ ID NO: 1, 2, 14 of the instant application. Bergquist teaches that the invention comprises a thermophilic enzyme which is used in PCR and RT/PCR amplifications (limitations of Claims 20, 36, 48). All PCR reactions were performed in Tris-HCL, MgCl2 with nucleotides, primers and DNA polymerase and template (page 12). Bergquist teaches that the reverse transcriptions were performed at 60C and allowed to proceed (page 12)(limitations of Claim 23, 39, 51). Bergquist teaches that Taq polymerase and Tth polymerase require Mn2+. Tfil polymerase shows the same high level of reverse transcriptase activity as Tth pol but differs in that no activity is obtained when MnCl2 was used instead of MgCl2 for reverse transcription (page 18). The polymerase is taught to be useful in RT-PCR assays.

Bergquist teaches that the polymerase comprises **LSDRIHLLHPE**. This polymerase comprises an amino acid sequence of L[SA].[-EAGP][LI].....E as required by Claim 13, 29, 41. The amino acid sequence is located in Figure 1-1 on the line beginning with 421 (limitations of Claim 13).

Response to Arguments

This argument has been thoroughly reviewed but is not found persuasive because Bergquist specifically teaches a polymerase comprising LSDRIHLLHPE. This polymerase comprises an amino acid sequence of L[SA].[-EAGP][LI].....E as required by Claim 13, 29, 41. The amino acid sequence is located in Figure 1-1 on the line beginning with 421 (limitations of Claim 13). Bergquist teaches a polymerase comprising the mutant domain.

The response filed September 15, 2005 asserst that the T filiformis DNA polymerase disclosed by Bergquist is a wild-type enzyme (see page 8-9 of response). This argument has been thoroughly reviewed, but is not found persuasive because the enzyme has all of the characteristics required by the claims. Whether Bergquist called it a wild-type or a mutant does not change the physical structure of the enzyme. Since all of the limitations of the claims are met regarding structure, the enzyme would constitute a mutant polymerase.

The response asserts that the motif of Bergquist is not the motif disclosed and claimed. This argument has been thoroughly reviewed, but is not found persuasive because the claims are not directed to being located at position 679 and having the particular sequence. As specifically stated in MPEP 2106, "While it is appropriate to use the specification to determine what applicant intends a term to mean, a positive limitation from the specification cannot be read into a claim that does not impose that limitation." Therefore, in the event that applicants wish to require the particular motif at position 679, the claims may be amended to require such a limitation.

The response asserts that "it is doubtful that the authors discovered the reverse transcriptase activity" (page 8 of response filed January 27, 2005). The response asserts that primer T7 is not complementary to alpha-lactalbumin mRNA. This argument has been thoroughly reviewed but is not found persuasive because while the response characterizes the references as saying that either P3 or T7 were used as the forward primer, Bergquist does not appear to say this. Bergquist states, "RT/PCR amplifications had the initial reverse transcription performed in a reaction volume of

25ml and contain 50nM Tris-HCl buffer pH 8.8, 2 mM MgCl2, 0.05% Tween 20, 0.05% Nonidet P40, 400 mM of each dNTP, and 100 ng of reverse primer P1 or p2. The amount of enzyme used was varied between 1 and 5 units, and often, the forward primer T7 or P3, which are necessary for the PCR amplification step was also included in the reverse transcription mixture." (page 12). The arguments provided by attorney do not appear to consider the full teachings of the reference. On page 18, Bergquist specifically discusses reverse transcriptase activity. Figure 7 and 8 are directed to experimental results. The results of Figure 7 are reverse transcription and thus, it is clear that reverse transcription and PCR amplification with as little as 32 pg of template RNA is successful (page 21). The response assert that "the strong bands in Figure 7 *could* easily be derived from contaminating plasmid DNA" Additionally the response asserts that "to the extent they show some kind of amplification reaction, it is likely that the detected bands are products of plasmid DNA contamination of the RNA samples." This argument has been thoroughly reviewed, but is not found persuasive because the possibilities and probabilities the response is discussing do not overcome the teachings of the references. The references teaches RT/CPR was performed and can be performed. Even if Bergquist's examples do not reverse transcribe RNA, which the examiner believes they do, at a minimum Bergquist teaches using Mg2+ as opposed to Mn2+ is a significant difference and reverse transcription in the presence of Mg2+ ions is preferable for two-step reactions where RNA is to be copied followed by DNA extension as Mn2+ ions are known to lower the fidelity of DNA synthesis. Therefore, Bergquist teaches using Mg2+ in lieu of Mn2+.

Conclusion

6. **No claims allowable.** Claims 14-16,30-32,42-44 are objected to as being dependant on non-allowable claims.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Jeanine Goldberg whose telephone number is (571) 272-0743. The examiner can normally be reached Monday-Friday from 7:00 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones, can be reached on (571) 272- 0745.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

The Central Fax Number for official correspondence is (571) 273-8300.

J. Goldberg

Jeanine Goldberg
Primary Examiner
November 15, 2005